

## CLAIMS

What is claimed is:

- 1     1.     An apparatus comprising:
- 2                 a means for receiving into a configurable programmed holographic
- 3     structure comprising a plurality of diffractive elements, an input optical signal
- 4     comprising a first spatial wavefront, the first spatial wavefront comprising a first
- 5     wavefront shape and a first optical spectrum, the input optical signal further
- 6     comprising a first direction of propagation;
- 7                 a means for diffracting an input optical signal, producing a diffracted
- 8     optical signal comprising an optical spectrum that differs from the input optical
- 9     spectrum in at least one of amplitude and phase, the diffracted optical signal
- 10    comprising a second direction of propagation that differs from the first direction of
- 11    propagation;
- 12                 a means for transmitting the diffracted optical signal, the diffracted optical
- 13    signal comprising a second spatial wavefront that compris a second wavefront shape,
- 14    wherein the first and second spatial wavefronts are not identical in shape; and
- 15                 a means for configuring the configurable programmed holographic
- 16    structure.

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